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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,447	04/27/2006	Ikurou Maruyama	2006_0649A	3430

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WENDEROTH, LIND & PONACK, L.L.P.
1030 15th Street, N.W.,
Suite 400 East
Washington, DC 20005-1503

EXAMINER	
EPPS FORD, JANET L	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,447	MARUYAMA ET AL.	
	Examiner	Art Unit	
	Janet L. Epps-Smith	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5 and 6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-4 were cancelled by Applicants.

3. New Claims 5-6 are presently pending for examination.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 5-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (New Matter).

6. The instant claims are drawn to a method for treating or curing a patient having tumor cells, which comprises administering an anti-tumor effective amount of ascopyrone to the patient thereby inducing apoptosis of the tumor cells and killing the tumor cells directly.

7. Applicants do not have support for "[a] method for…curing a patient having tumor cells.." The specification as filed provides for a method of treating a patient having tumor cells, however a method of treating is not sufficient to describe a method for "curing" a patient.

8. Claims 5-6 rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for treating a patient having tumor cells comprising the administration of ascopyrone P by direct injection into the tumor cells, does not reasonably provide enablement for curing a patient having tumor cells. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not limited to:

(A) The breadth of the claims;

(B) The nature of the invention;

(C) The state of the prior art;

(D) The level of one of ordinary skill;

(E) The level of predictability in the art;

(F) The amount of direction provided by the inventor;

(G) The existence of working examples; and

(H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation.

9. The breadth of the instant claims encompasses the curing of a patient having any form of tumor cells.

10. The specification as filed, see Example 3, provides only guidance for direct injection of ascopyrone P into subcutaneously injected tumor cells in mice. There is no evidence provided in the specification as filed for curing a patient having tumor cells. Example 3 provided only evidence of a slower tumor growth rate associated with ascopyrone P injection into tumors, there is no evidence of "curing" which involves complete removal and/or elimination of tumor cells in the mouse. Thus, Applicant's specification as filed does not provide sufficient guidance and/or instruction for the ordinary skilled artisan to practice the full scope of the claimed invention without undo experimentation.

Response to Arguments

Claim Rejections - 35 USC § 103

11. The rejection of claims 1-4 under 35 U.S.C. 103(a) as being unpatentable over Morgan et al. in view of NCI-Antioxidant Cancer Prevention, for the reasons of record, and further in view of Buchter-Larsen et al. (US 6,914,175), Behrend et al. (Biochemical Society Transaction, 2003, Vol. 31, part 6, pages 1441-1444), Yamaji et al., and Vieira et al., is withdrawn in response to Applicant's cancellation of these claims.

12. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan et al. in view of NCI-Antioxidant Cancer Prevention, for the reasons of record, and further in view of Buchter-Larsen et al. (US 6,914,175), and Behrend et al. (Biochemical Society Transaction, 2003, Vol. 31, part 6, pages 1441-1444).

13. Newly added claims 5-6 are rejected on the same grounds as claims 1-4 as set forth in the prior Office Actions. See the following:

14. Morgan et al. discloses a method for preparing ascopyrone P. Ascopyrone P is known to function as a good antioxidant, and antimicrobial agent (see page 1, 2nd paragraph). However, the teachings of Morgan et al. are silent in regards to the function of ascopyrone P as an antitumor medicine.

The National Cancer Institute Antioxidant and Cancer Prevention: Fact Sheet, teaches that antioxidants may function to prevent cancer by the following mechanism: "[A]ntioxidants neutralize free radicals as the natural by-product of normal cell processes. Free radicals are molecules with incomplete electron shells which make them more chemically reactive than those with complete electron shells. Exposure to various environmental factors, including tobacco smoke and radiation, can also lead to free radical formation. In humans, the most common form of free radicals is oxygen. When an oxygen molecule (O2) becomes electrically charged or "radicalized" it tries to steal electrons from other molecules, causing damage to the DNA and other molecules. Over time, such damage may become irreversible and lead to disease including cancer. Antioxidants are often described as "mopping up" free radicals, meaning they neutralize

the electrical charge and prevent the free radical from taking electrons from other molecules."

Buchter-Larsen et al. teach a process for the preparation of an anti-oxidant in plant. Specifically, this reference teaches the preparation and use of 1,5-D-anhydrofructose (a precursor to ascopyrone) as a water soluble antioxidant (see col. 6, lines 1-12). Moreover, this reference provides another clear suggestion and motivation for using potent antioxidants as anticancer agents, see for example: col. 4, lines 5-10, which recite:

"[ ]The present invention is further advantageous in that it enables the levels of antioxidants in foodstuffs to be elevated. This may have beneficial health implications. In this regard, recent reports (e.g. Biotechnology Newswatch Apr. 21 1997 "Potent Antioxidants, as strong as those in fruit, found in coffee" by Marjorie Shaffer) suggest that antioxidants have a pharmaceutical benefit, for example in preventing or suppressing cancer formation."

Moreover, Behrend et al. states that: "[T]he response to mitogenic as well as to cytokine signals can be diminished by non-enzymic and enzymic *antioxidants,* which implies a direct role for ROS as second messenger molecules in transducing receptor initiated signaling cascades that control diverse cellular events such as proliferation, apoptosis and inflammation." (page 1441, last ¶) Furthermore, Behrend et al. teaches that there is a growing body of evidence that suggests that elevated levels of ROS form a part of signaling cascades that induce and maintain the oncogenic phenotype of cancer cells, and the finding that *elimination of excessive ROS by chemical or enzymatic antioxidants decreases tumorigenicity* of various types of tumor cells has opened upon new areas for research in cancer biology (see last paragraph of page 1442).

Therefore, contrary to Applicant's assertions, the prior art clearly suggests the use of antioxidants, for the elimination of excessive ROS, therefore leading to the reduction of tumorigenicity of various type of tumor cells, including metastatic growth of tumors as taught by Behrend et al. Moreover, the prior art also provides a clear suggestion for the use of the antioxidants of the instant invention as a potent scavenger of reactive oxygen species. Therefore, the ordinary skilled artisan, at the time of the instant invention, would have been motivated to use the prior art antioxidants recited in the instant claims in a method for treating a patient having tumor cells.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janet L. Epps-Smith whose telephone number is 571-272-0757. The examiner can normally be reached on M-F, 10:00 AM through 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach can be reached on 571-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Janet L. Epps-Smith/
Primary Examiner
Art Unit 1633

/J. L. E./
Primary Examiner, Art Unit 1633